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09/903,217	07/10/2001	Suresh Katukam	CISCP707	9962

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AKA CHAN LLP / CISCO  
900 LAFAYETTE STREET  
SUITE 710  
SANTA CLARA, CA 95050

EXAMINER

PATEL, JAY P

ART UNIT PAPER NUMBER

2666

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/903,217

Applicant(s)

KATUKAM, SURESH

Examiner

Jay P. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-12,14-22,24-30 and 32-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21,22,24-30 and 32-54 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,9-12,14-17,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 8 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 4, 6, 7, 9-10, 11, 14, 16, 17 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Elliott et al. (US Patent No. 6895091 B1).

3. In regards to claims 1 and 11, Elliott anticipates a method for computing a primary path within a mixed protection domain network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node. In figure 5, Elliott discloses a quantum-cryptographic network with multiple hosts (nodes) and links, which are protected (solid links) and unprotected (dashed links) (see figure 5 and column 5 lines 11-27).

In yet further regards to claims 1 and 11, Elliott also anticipates identifying a plurality of paths, which are characteristically similar, each of the plurality of potential paths, which are characteristically similar having at least one similar protection characteristic and being arranged between the source node and the destination node. In figure 5, node A is connected to node B via protected link 552. Node B is connected to node G via unprotected link 578. Node B is connected to node F via protected link

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556, which is connected to node G via protected 568. Therefore, if node A wishes to send a message to node G it can send a message through links 552 and 578 or through links 552, 556 and 568. The similar characteristic between both these paths is the first protected link 552.

In further regards to claims 1 and 11, Elliott also anticipates selecting a first potential path from a plurality of paths which are characteristically similar and identifying a second potential path for use as an actual path between the source node and the destination node, the second potential path being characteristically different and having at least one different protection characteristic from the first potential path. In figures 8 and 9 illustrate a database stored in the host/router, and a forwarding table respectively. In figures 8 and 9, a destination node is shown with the corresponding next hop and an indication whether or not the path is protected or not protected. The protection variable indicates whether the message will traverse an unprotected or a protected link if forwarded on to the indicated next hop to reach a destination node (see figures 8 and 9 forwarding tables and column 6, lines 27-31).

In further regards to claims 1 and 11, Elliot also anticipates comparing the first potential path with the second potential path for use as the actual path between the source node and the destination node, wherein other potential paths included in the plurality of potential paths which are characteristically similar are not considered for use as the actual path between the source node and the destination node. Figure 8, illustrates a forwarding table containing data for forwarding packet data, received at node B to any other node with the network via either protected or unprotected links.

Figure 9, illustrates a forwarding table with protected links only. As evident from the above-mentioned figures, if node B wished to communicate with node D for example, it can either chose the unprotected path with next hop node C or the protected path with the next hop node F.

In regards to claims 4 and 14, Elliott anticipates selecting one of the first potential path and the second potential path for use as the actual path. In figures 8 and 9 illustrate a database stored in the host/router, and a forwarding table respectively. In figures 8 and 9, a destination node is shown with the corresponding next hop and an indication whether or not the path is protected on not protected. The protection variable indicates whether the message will traverse an unprotected or a protected link if forwarded on to the indicated next hop to reach a destination node (see figures 8 and 9 forwarding tables and column 6, lines 27-31).

In regards to claims 6 and 16, Elliott anticipates identifying all potential paths arranged between the source node and the destination node. In figures 8 and 9 illustrate a database stored in the host/router, and a forwarding table respectively. In figures 8 and 9, a destination node is shown with the corresponding next hop and an indication whether or not the path is protected on not protected. The protection variable indicates whether the message will traverse an unprotected or a protected link if forwarded on to the indicated next hop to reach a destination node (see figures 8 and 9 forwarding tables and column 6, lines 27-31). Therefore, a node can select either a protected or unprotected next hop to reach its destination.

In regards to claims 7 and 17, Elliott anticipates selecting a first link, the first link being arranged between the source node and a first node included in the plurality of nodes. In figure 13, step 1315, the process determines if eavesdropping has occurred on the link (see figure 13, step 1315 and column 8, lines 64-67).

In further regards to claims 7 and 17, Elliott also anticipates selecting a second link, the second link being associated with the first node. The process disclosed in figure 13 is applicable to all links so therefore; the disclosure used with regards to the previous limitation is also applicable to the present limitation.

In further regards to claims 7 and 17, Elliott also anticipates determining when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to a potential path. In figure 14, it is disclosed that the link protection variable is reported to the routing engine, which in turn distributes the protection variable to other nodes in the network (see figure 14 and column 9, lines 50-61).

In regards to claims 9 and 19, Elliott also anticipates the plurality of potential paths, which share a similar protection characteristic. In figure 5, node A is connected to node B via protected link 552. Node B is connected to node G via unprotected link 578. Node B is connected to node F via protected link 556, which is connected to node G via protected 568. Therefore, if node A wishes to send a message to node G it can send a message through links 552 and 578 or through links 552, 556 and 568. The similar characteristic between both these paths is the first protected link 552.

In regards to claims 10 and 20, Elliott also anticipates the plurality of paths having the same protection configuration. The network illustrated in figure 5 is a quantum cryptographic network (QC-network) that implements quantum cryptographic techniques to those links that are protected (see figure 5 and column 4, lines 54-65).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 5, 12 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott et al. (US Patent No. 6895091 B1) as applied to claims 1, 4, 11 and 14 above further in view of Naranjo et al. (US Publication 2003/0076816 A1).

6. In regards to claims 2 and 12, the primary reference Elliott teaches all the limitations of claim 1 as stated above. Elliot fails to teach determining a cost of each potential path of the plurality of potential paths which are characteristically similar, wherein the cost of the first potential path is lower than the cost of substantially all other potential paths included in the plurality of potential paths.

Naranjo teaches the above-mentioned limitation. Naranjo discloses a table on page 3 for two calls having two potential paths each (see the table on page 3 and paragraph 34). For example, call A has a duration of 1.5 minutes and the cost per second for potential route 1 is 3 cents with the measured increment of 10 seconds and the cost per second for potential route 2 is 2 cents with the measured increment of 1

minute. According to the algorithm disclosed by Naranjo, for call A, route 1 is cheapest although the cost per increment is higher. Therefore, this disclosure anticipates selecting a first potential path with a lower overall cost where both paths have a similar characteristic of having an associated cost per increment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the link protection scheme disclosed by Elliott with the cost-effective routing method disclosed by Naranjo. The proper motivation comes from Naranjo where he states "routing based on variety of factors, can be applied by the system administrator to achieve an efficient and cost-efficient routing plan" (see page 1, summary of invention section).

In regards to claims 5 and 15, the primary reference Elliott teaches all the limitations of claims 1, 4, 11 and 14 as stated above. Elliott fails to teach selecting the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and selecting the second potential path for use as the actual path when the cost of the second potential path is lower than the cost of the first potential path.

Naranjo teaches the above-mentioned limitation. Naranjo discloses a table on page 3 for two calls having two potential paths each (see the table on page 3 and paragraph 34). For example, call A has a duration of 1.5 minutes and the cost per second for potential route 1 is 3 cents with the measured increment of 10 seconds and the cost per second for potential route 2 is 2 cents with the measured increment of 1 minute. According to the algorithm disclosed by Naranjo, for call A, route 1 is cheapest

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although the cost per increment is higher. Therefore, this disclosure anticipates selecting a first potential path with a lower overall cost where both paths have a similar characteristic of having an associated cost per increment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the link protection scheme disclosed by Elliott with the cost-effective routing method disclosed by Naranjo. The proper motivation comes from Naranjo where he states "routing based on variety of factors, can be applied by the system administrator to achieve an efficient and cost-efficient routing plan" (see page 1, summary of invention section).

***Allowable Subject Matter***

7. Claims 8 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 21-22, 24-30 and 32-54 are allowed.

In regards to claims 21 and 29, the cited prior art either individually or in combination fails to teach **a computer code that causes a third potential path between the source node and the destination node to be identified as being characteristically different and having at least one different protection characteristic from the first potential path and the second potential path and computer code that causes a comparison of the first potential path with the third potential path for use as an actual path between the source node and the destination node, wherein the second potential path is not considered for use as**

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**the actual path between the source node and the destination node.** It is noted that the closest prior art Elliott discloses a quantum cryptographic network that identifies links that are protected or unprotected by quantum cryptographic techniques (see figures 5, 8 and 9).

In regards to claims 36, 41 and 46 the cited prior art either individually or in combination fails to teach **identifying a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in the first set of potential paths and the second set of potential paths.** It is noted that the closest prior art Elliott discloses a quantum cryptographic network that identifies links that are protected or unprotected by quantum cryptographic techniques (see figures 5, 8 and 9).

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-2, 4-7, 9-12, 14-17 and 19-20 have been considered but are moot in view of the new ground(s) of rejection. The applicant has stated in the amendment filed 5/24/2005 that claim 1 has been amended to include the limitations of claim 3. Although this is taken into consideration, the amended claim 1 also includes terms such as "mixed protection domain", "plurality of paths having a similar protection characteristic" and "having at least one different protection characteristic." It should be noted that claims 1 and 3 did not include the

above-mentioned terms and therefore, they necessitated that the examiner perform another search, which warranted the present final rejection being issued.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPP 9/2/05  
Jay P. Patel  
Assistant Examiner  
Art Unit 2666

Seema S. Rao  
SEEMA S. RAO 9/6/05  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600